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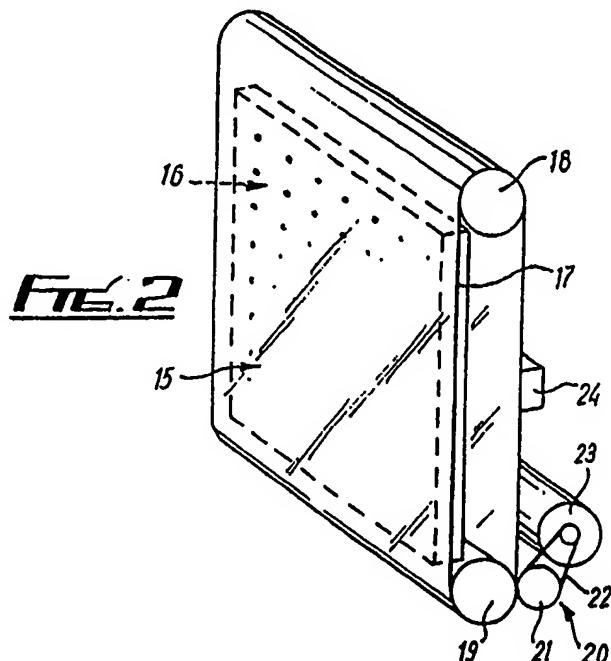
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## (54) Display for entertainment machines

(57) An entertainment machine has a display region (15) with a set of sections which can be illuminated by lamps. There is a bank of lamps (16) which is larger than the set of sections, and a control system operates to activate only those lamps from the bank which correspond to the set of sections to be illuminated. The machine may be of the fruit machine kind having a main display with rotatable reels (9) and a supplementary display in the form of a panel which is back-illuminated with the lamps (16). The panel may be provided by a flexible light transmitting sheet (17) movable 10 in a closed loop around rollers (18, 19) to bring different regions (15) into position in front of the bank of lamps (16).



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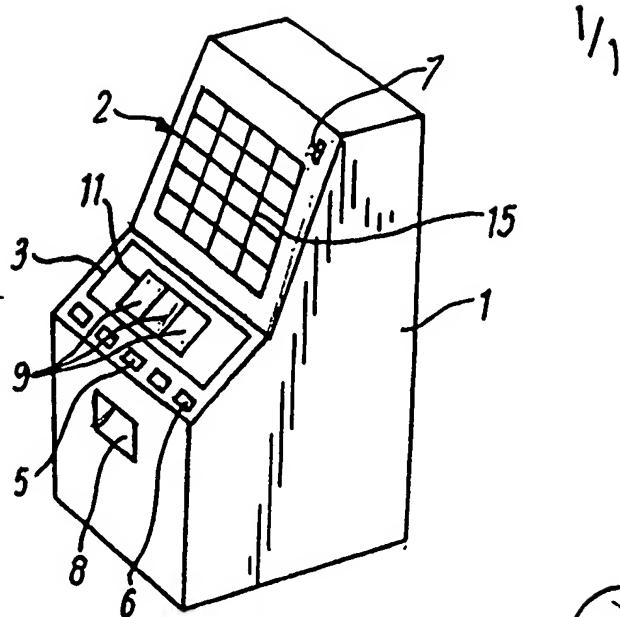


Fig. 1

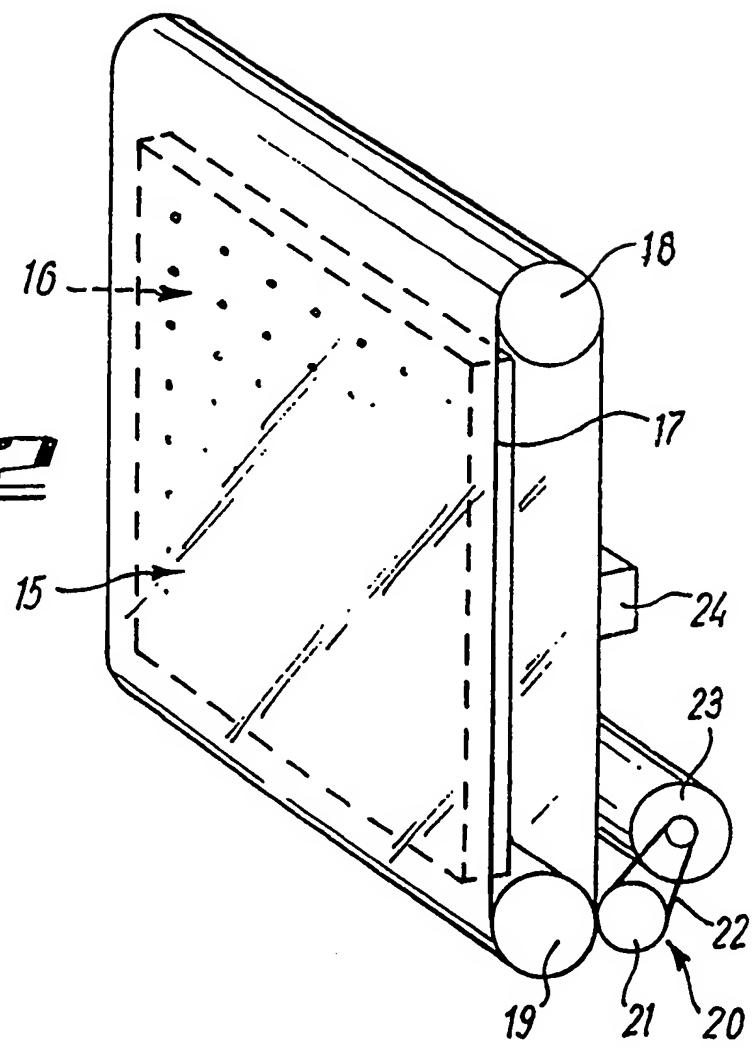


Fig. 2

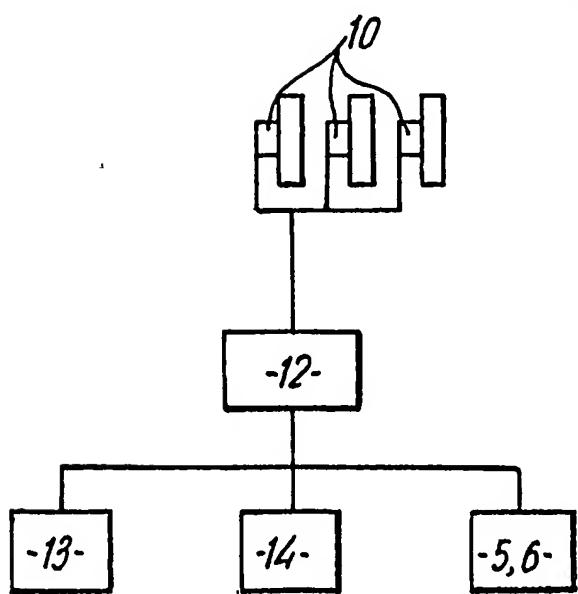


Fig. 3

ENTERTAINMENT MACHINES

This invention relates to player-operable entertainment machines, particularly coin-operated amusement with prizes (AWP) machines, such as "fruit" or "poker" machines of the kind having a main display device for displaying a selected combination of symbols at a win zone. As used herein the term coin is intended also to cover tokens, charge or credit cards or any other means of supplying credit or monetary value.

The main display device of a fruit machine may comprise multiple side-by-side reels which are rotatable about a common horizontal axis within a housing behind a window at the win zone. Each reel has symbols at equally spaced positions around its periphery and the reels can be brought to rest with one symbol on each reel displayed through the window on a win line.

If the displayed combination of symbols constitutes a predetermined winning combination an award may be made available to the player.

It is well known to provide a supplementary display or 'games feature' which can be used to enhance the entertainment value of the machine and provide additional or alternative opportunities for winning.

In particular, it is known to provide a panel having sections which can be selectively illuminated to represent movement along a track or path, e.g. simulating the playing of a board game, or to represent or record the selection of numbers or other symbols, e.g. simulating the playing of roulette.

Play is transferred from the main reels to the games feature on a random or predetermined basis and illumination of the panel sections may then be effected by, or in correspondence with, a rotatable subsidiary feature reel, or otherwise.

5 It is usual for the panel to be constructed as a screen-printed glass sheet which is back-illuminated using appropriately pre-positioned lamps.

With this arrangement, a particular machine model is manufactured as a single-function machine with a particular games feature and this may detract from or limit the player-appeal of the machine model. A player may 10 be deterred from playing that particular machine model due to over familiarity with the games feature, or personal preference for a different games feature, or because the complexity of the games feature is not suited to the player's abilities.

Also, with the known arrangement, the use of a purpose-made screen-printed glass panel with appropriately pre-positioned lamps individually 15 positionally matched to sections to be illuminated may impose a practical limitation on the overall number or range of positions of the illuminated sections.

One object of the present invention is to provide an entertainment 20 machine with an illuminated display providing improved or enhanced display possibilities.

A further object of the present invention is to provide an entertainment machine with an illuminated display which can be changed to

give different displays on the same machine corresponding to different games features which can be played on that machine.

According to one aspect of the present invention therefore there is provided an entertainment machine having a display region with a set of sections which can be illuminated by lamps, characterised by the provision of a control system operable to activate a combination of lamps, selected from a larger bank thereof, corresponding to the said set of sections.

With this arrangement, because the lamps which are used for illumination of the sections are selected by a control system from a larger bank of lamps, it will be appreciated that a range of different illuminated displays can be conveniently accommodated with the same machine.

Thus, manufacture of different machine models with different illuminated displays can be much facilitated in so far as different patterns of illumination can be achieved by setting the control system rather than having to pre-position individual lamps.

Also, there is the possibility of varying the display of a particular machine model from time to time whereby a multi-function machine with which different games can be played can be provided.

With regard to the bank of lamps, this preferably comprises a grid or array of lamps extending over all, or at least a major part of the display region.

Preferably the lamps are disposed side-by-side in an essentially two-dimensional grid or array. Preferably also the grid or array is regular or

substantially regular over all or a major part thereof in that there is a common spacing of the bulbs along each of two mutually perpendicular axes. Thus, there may be multiple side-by-side rows, the lamps being equally spaced within each row and the rows being equally spaced with the 5 lamps of each row aligned or staggered relative to the lamps of the next adjacent row.

The spacing of the lamps may be such that there is one lamp for each display section to be illuminated. Alternatively there may be multiple lamps for each section.

10 In one example, a grid of 32 by 32 bulbs is used. This gives a very wide range of possible combinations.

If desired those lamps which are not to be used in a particular machine may be removed from the bank.

15 The lamps may be filament bulbs or any other suitable kind of lamp or equivalent illumination device. The lamps may have reflectors and/or diffusers as desired. The lamps may be independent structures or may be integral parts of a larger structure.

20 The lamps are preferably used for back-illumination purposes whereby the display region has a panel of transparent or translucent material in front of the grid of lamps. However, any other suitable mode of illumination may be used.

The control system preferably comprises microprocessor-controlled switching circuitry whereby a selected pattern of lamps is operated in

accordance with software instructions. Other means of switching or control are also possible.

The activated lamps can be switched on and off or flashed in the usual manner individually and/or simultaneously dependent on a procedure

5 to be implemented or a game to be played using the display region.

Most preferably the entertainment machine is an 'amusement with prizes' (AWP) machine particularly of the fruit machine or poker machine kind using actual (or simulated) rotatable reels as mentioned above. In this case, the display region is preferably a supplementary display region for use

10 with a games feature additional to a main display of the machine.

The machine may be pre-set with a predetermined said combination of lamps activated so that a single predetermined set of display region sections can be illuminated.

Alternatively, the machine may be controllable or adjustable so that

15 different combinations of lamps can be activated to enable different sets of display region sections to be illuminated. This embodiment may be utilised for substitution or replacement of illuminated displays whereby for example a player can change a display or select a display from a range of displays for variety or to enable the player to select a game of a desired level of

20 complexity. This embodiment can also be used to introduce or remove different displays at different parts of the display region e.g. corresponding to different aspects of a game or different game features with the same machine.

In the case of substitution or replacement of illuminated displays as mentioned above, there are preferably provided different panels which can be changed in correspondence with change of the displays. Preferably also change of the panels is effected automatically. This may be achieved with

5 a flexible transparent or translucent sheet or band which can be driven between different stopping positions to introduce different display regions thereof in front of the bank of lamps.

According to a second aspect of the present invention, preferably combined with the first aspect, there is provided an entertainment machine

10 having a plurality of display regions each having a set of sections which can be back illuminated by lamps from a bank thereof, characterised in that said display regions are regions of a flexible light-transmitting sheet, said sheet being movable between different stopping positions at each of which a respective said region is positioned in front of the said bank of lamps.

15 Preferably the sheet is in the form of a closed loop arranged to be driven around rollers or spindles. Preferably also there is provided an automatic drive mechanism connected to a sheet position sensor which operates to move the sheet and then arrest it in registration with one of the stopping positions. The positions sensor may comprise a photosensor which

20 operates in conjunction with edge markers or the like on the sheet.

Suitably, the sheet may be formed from a plastics material such as PVC or the like and this may run behind a glass panel.

The invention will now be described further by way of example only

and with reference to the accompanying drawings in which:-

Fig. 1 is a diagrammatic perspective view of one form of an entertainment machine according to the invention;

5 Fig. 2 is an enlarged diagrammatic perspective view of display equipment of the machine of Fig. 1; and

Fig. 3 is a block circuit diagram of the machine.

Referring to the drawings, these show a fruit machine having a floor-standing box shaped housing 1 having a front wall which includes upper and lower glass panels 2, 3, a number of operating buttons 5, 6, a coin slot 7 and a payout opening 8.

Within the housing 1 there are three axially aligned reels 9 having say 20 symbols at regularly spaced positions around their peripheries. The reels 9 are axially rotatable and are drivably connected to respective stepper motors 10. The reels 9 are arranged behind a window 11 defined by a printed region of the lower glass panel 3. Each reel 9 can be arrested by the respective stepper motor 10 in any of 20 stepping positions in which one symbol is in precise registration with a horizontal win line in the centre of the window 11 and two further symbols are visible above and below the win line.

20 The stepper motors 10 are connected to a microprocessor-based control unit 12. This unit is also connected to a coin-mechanism 13, a payout mechanism 14 and the buttons 5, 6.

In use, the player inserts coins into the coin mechanism 13 through

the slot 7 sufficient to generate credit for one or more games, and the machine is actuated so that a game can now be played. The game commences after a start button 5 has been pressed and the reels 9 spin and then come to rest so as to select a combination of symbols displayed on the 5 win line. The displayed symbol combination is assessed by the control unit 12 and a win indication is given in the event that the combination is of a predetermined winning nature.

The control buttons 5 can be used to perform 'hold' or 'nudge' 10 functions, when made available to the player, so that the player can seek to influence the outcome of a game, in conventional manner.

The button 6 is used to change the game to be played as described hereinafter.

The upper panel 2 is a transparent glass panel and behind this there 15 is a display region 15, which can be back-illuminated with a bank of lamps 16, and which provides a supplementary games feature.

The display region 15 is screen printed, together with two other display regions, on a flexible transparent sheet 17 formed from a plastics material such as PVC. The sheet 17 is in the form of a continuous loop 20 which runs around upper and lower freely rotatably mounted rollers 18, 19. The bank of lamps 16 is mounted between the front and back runs of the sheet 17.

A drive mechanism 20 is provided for the continuous loop, such mechanism comprising a pinch roller 21 connected by a drive belt 22 to an

electric motor 23. A position sensor 24 is also provided comprising a photo-sensor mounted to scan position markers along one edge of the sheet 17, position sensing being effected by counting markers from a reference position or by code-reading individually coded markers. The motor 23 and 5 position sensor 24 are connected to the control unit 12.

The bank of lamps 16 comprises a regular 32x32 array of filament lamps individually connected to the control whereby each of the 1024 lamps can be separately switched on and off.

In known manner, each of the three display regions 15 on the sheet 10 17 comprises a series of interconnected screen-printed sections such as board game squares, or locations along a path or track, or positions on a roulette wheel or the like.

The sheet 17 can be driven by the pinch roller 21 so as to run around the rollers 18, 19, and when so driven the sheet 17 can be arrested in any 15 of three positions in each of which a respective one of the display regions 15 is located in a predetermined position over the bank of lamps 16 centrally behind the upper front glass panel 2.

Driving of the sheet 17 and stopping of this in registration with the predetermined stopping position is achieved by reference to the information 20 from the photosensor 24. That is, once the sheet 17 has been set in motion, the sheet continues moving and the motor drive 20 is only switched off when the position sensor 24 indicates that the sheet 17 is in one of the stopping positions. The drive 20 may permit slight slippage of the sheet 17

but this is permissible in so far as great precision of registration of the display regions of the sheet is not essential.

The control unit 12 is pre-programmed with three sets of lamp combinations corresponding respectively to the three display regions 15.

- 5      Each set of combinations relates to the printed sections of the display region 15 which are to be back-illuminated.

In use, after activating the machine by insertion of coins, the player can operate the button 6 to select a game to be played. Each press of the button 6 operates the drive mechanism 20 to advance the sheet 17 to bring 10 the next display region 15 into position over the bank of lights 16. At the same time a different combination of lamps is selected corresponding to the selected display region 15. Also as appropriate a different game-playing routine is selected.

- 15     After a particular display region 15 has been selected, some or all of the sections may be back-illuminated or flashed with the lamps prior to playing of a game.

The player can now play a game in the usual way. The reels 9 are rotated to select a combination of symbols. At random or on a predetermined basis, game play is transferred to the display region 15 and 20 lamps, from the selected combination of lamps, are switched on and off to back-illuminate appropriate sections of the display region 15 in correspondence with a subsidiary games feature operation such as the rotation of a subsidiary reel (not shown).

In this way, the machine operates as a multi-function machine and provides three types of games for selection by the player. The games may differ in complexity, representing a very simple game, one of medium complexity, and one of a very involved nature. This gives players the 5 opportunity to try any one of the three games and therefore the machine can appeal to a wider audience than a conventional single-function machine.

It is of course to be understood that the invention is not intended to be restricted to the details of the above embodiment which are described by way of example only.

CLAIMS

1. An entertainment machine having a display region with a set of sections which can be illuminated by lamps, characterised by the provision of a control system operable to activate a combination of lamps, selected from a larger bank thereof, corresponding to the said set of sections.
- 5 2. A machine according to claim 1 characterised in that the bank of lamps comprises a grid or array of lamps extending over at least a major part of the display region.
3. A machine according to claim 2 characterised in that the lamps are disposed side-by-side in an essentially two-dimensional grid or array.
- 10 4. A machine according to claim 2 or 3 characterised in that the grid or array is regular in that there is a common spacing of the lamps along each of two mutually perpendicular axes.
5. A machine according to any one of claims 1 to 4 characterised in that the display region has a panel of transparent or translucent material in front of the bank of lamps.
- 15 6. A machine according to any one of claims 1 to 5 characterised in that the machine is of the kind having actual (or simulated) rotatable reels and the display region is a supplementary display region for use with a games feature additional to a main display of the machine.
- 20 7. A machine according to claim 6 characterised in that the machine is pre-set with a predetermined said combination of lamps activated so that a single predetermined set of display region sections can be illuminated.

8. A machine according to claim 6 characterised in that the machine is controllable or adjustable so that different combinations of lamps can be activated to enable different sets of display region sections to be illuminated.
9. A machine according to claim 8 characterised in that the control or adjustment can be effected by a player for substitution or replacement of illuminated displays.
10. A machine according to claim 8 characterised in that the control or adjustment can be effected to introduce or remove different displays at different parts of the display region corresponding to different aspects of a game or different game features with the same machine.
11. A machine according to claim 9 or 10 characterised in that there are provided different panels which can be changed in correspondence with change of the displays.
12. A machine according to claim 11 characterised in that change of the panels is effected automatically.
13. A machine according to claim 12 characterised in that there is provided a flexible transparent or translucent sheet or band which can be driven between different stopping positions to introduce different display regions thereof in front of the bank of lamps.
14. An entertainment machine having a plurality of display regions each having a set of sections which can be back illuminated by lamps from a bank thereof, characterised in that said display regions are regions of a flexible light-transmitting sheet, said sheet being movable between different stopping

positions at each of which a respective said region is positioned in front of the said bank of lamps.

15. A machine according to claim 14 characterised in that the sheet is in the form of a closed loop arranged to be driven around rollers or spindles.

5 16. A machine according to claim 14 or 15 characterised in that there is provided an automatic drive mechanism connected to a sheet position sensor which operates to move the sheet and then arrest it in registration with one of the stopping positions.

10 17. A machine according to claim 16 characterised in that the positions sensor comprises a photosensor which operates in conjunction with edge markers or the like on the sheet.

18. A machine according to any one of claims 14 to 17 characterised in that the sheet is formed from a plastics material and is run behind a glass panel.

15 19. A machine according to any one of claims 14 to 18 which is a machine according to any one of claims 1 to 13.

20. A machine substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.



Application No: GB 9404267.8  
Claims searched: 1 to 13

Examiner: Mr. G.M Pitchman  
Date of search: 7 June 1995

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.N): G5C (CHA)

Int Cl (Ed.6): G09G 3/08

Other: ONLINE: EDOC WPI JAPIO

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2030339 (VAHIBOGLU)-see page 2 lines 50 to 62	1 to 4
X	GB 2029066 (VAHIBOGLU)-see page 1 lines 104 to 105 and figure 3	1 to 4
X	GB 328613 (TOLLERMACHE)-see figures 1, 7, 8 and 9	1 to 4
X	WO 91/10209 (RAHA-AU-TOMAATTIYHDISTYS)-see page 3 lines 23 to 30 and figures 1 and 2a	1 to 4

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|---|---|--|
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